CITY OF MOUNTAIN VIEW

Community Development Department • Building Inspection Division
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COMMERCIAL FIRE SPRINKLER REQUIREMENTS

UNDERGROUND FIRE LINES, ON-SITE FIRE PIT & OVERHEAD FIRE SPRINKLER SYSTEMS

This information package shall be used in conjunction with NFPA 13, 13R, 24, and other applicable NFPA design standards as adopted by the City of Mountain View, for commercial buildings and R-1 Occupancies. (Refer to Mountain View City Code Chapter 8 for adopted editions of NFPA). This information package is not intended for use as a stand-alone document.

ADMINISTRATIVE:

- Submit a completed permit application and a minimum of three (3) sets of drawings and hydraulic calculations to the Building Inspection Division, 500 Castro Street, Mountain View. Submittals must be made in person. Submittals received via mail will be returned to the sender.

- Plan check turnaround time for initial submittals is a **minimum** of 10 working days with rechecks a **minimum** of 5 working days.

- All plan information shall be bluelined onto the drawings.

- Incorporate onto the drawings: the contractor's name, address, phone number, California Contractor's license number and license type or P. E. license number.

- The contractor will be notified by phone when the plans and permit are ready for pickup. All plan check and permit fees will be collected when the plans are approved. **Plans and plan check corrections must be picked up in person. Plan check corrections will not be returned to the contractor by mail or fax.**

- Field inspections are conducted Monday, Wednesday and Friday only. For inspection scheduling or for general information please call (650) 903-6313. Inspections will not be scheduled until a permit has been issued. **Allow 2-3 working days' advanced notice when requesting inspections.** The permit card and an approved set of plans must be kept at the project site until the permit is finaled. Failure to maintain the permit card and approved plans on site will result in the cancellation of the inspection.

- System equipment and piping shall not be installed prior to issuance of a permit.

GENERAL REQUIREMENTS:

1. The **minimum** scale for overhead fire sprinkler plans is 1/8" = 1'-0". In addition, plans and pipe lengths shall be fully dimensioned to coincide with the specified scale.

2. All fire sprinkler submittals requiring hydraulic calculations shall include a copy of the City of Mountain View Fire Flow Data Form. In addition, fire flow data shall include the elevation of the tested hydrant in relation to the base of the sprinkler riser. Fire Flow Data Forms shall be obtained from the City of Mountain View Water Division at (650) 903-6329.

UNDERGROUND FIRE LINES AND ON-SITE FIRE PIT

SPECIFIC REQUIREMENTS:

1. The underground fire line shall be designed and installed in accordance with the City of Mountain View Requirements, NFPA 13, 24 and other applicable NFPA Standards as adopted by the City of Mountain View. *Incorporate this as a verbatim note onto the drawings.*

2. The color of the post indicator valve (PIV) and fire department connection (FDC) shall be red. The fire department connection shall be provided with two (2) horizontal rows of 3-inch-wide highly reflective tape, spaced 3" apart, placed on the upper portion of the fire department connection riser. *Incorporate as a note on the drawings or provide in a detail.*

3. All underground fire lines and hydrants shall be flushed using the velocities specified in NFPA 24 prior to any overhead pipe being connected. Contractors shall have the appropriate tools and equipment on-site to complete a flush of all piping and hydrants. There shall be sufficient fire hose to direct the water to a safe location off the site. In the case of multiple hydrants or risers, a minimum of two (2) appurtenances shall be connected and ready to flush. A minimum of two (2) replacement hoses, along with additional burlap sacks, shall be available on site. *Incorporate the following flush arrangements as verbatim notes onto the drawings.*

   - 4” pipe shall be flushed through a minimum of one (1) 4” hose or two (2) 2 1/2” hoses.
   - 6” pipe shall be flushed through a minimum of one (1) 4” hose or four (4) 2 ½” hoses.
   - 8” pipe shall be flushed through a minimum of two (2) 4” hoses; one (1) 4” hose and two (2) 2 ½” hoses; or six (6) 2 ½” hoses.

   Note: Fire hydrants shall be flushed using the hose arrangement required for 6” pipe. Wharf hydrants shall be flushed using the hose arrangement required for 4” pipe.

4. A hydrostatic test at 200 psi for two hours is required. This test shall be witnessed by the Fire Protection Engineer prior to covering the pipe. Center loading is permissible. *Incorporate as a verbatim note onto the drawings.*

5. The fire department connection (FDC) and post indicator valve (PIV) shall be provided with an all-weather sign indicating the address (es) and system components served. (ie. auto sprinkler, on-site hydrant, and wharf hydrant). The FDC shall be provided with frangible metal caps or brass plugs. Plastic caps are not permitted. Incorporate a sign detail for each FDC and PIV onto the drawings. See attached sign examples.

6. Civil drawings are not construed as underground fire line drawings and will not be accepted for review.

7. Backflow prevention shall be installed on the address side of the building in accordance with the City of Mountain View Public Works Standard Provisions. The applicable standard fire pit detail shall be incorporated onto the drawings. Note: When a standard fire pit is provided for an on-site wharf hydrant the PIV shall be deleted from the standard detail.

8. Indicate the proposed occupancy classification and sprinkler design density for the building.

9. When required, on-site wharf hydrants shall consist of two (2) 2-1/2" hose valve outlets capable of supplying 500 gallons per minute with both outlets flowing. Hose valve outlets shall be listed for exterior use and provided with a 1-1/8" pentagonal nut. Submittals shall include complete manufacturer specifications for the proposed hose valve outlets. See attached installation detail.

   NOTE: On-site wharf hydrants and/or on-site City standard hydrants may be required when the building(s) is located in excess of 150' from an approved vehicular access roadway or fire hydrant, or the building(s) is not protected with automatic fire sprinklers.

10. Indicate the size of the city main.

11. Indicate the type and size of all underground pipe and fittings. Type shall include class of pipe, class of fittings and pressure rating.

12. Indicate the method of restraining the underground piping (ie. thrust blocks, rods etc.). Provide complete calculations for sizing of thrust blocks and specify rod diameters and clamp sizes in accordance with NFPA 24.

13. Indicate the location and type of all above and below grade valves. All fire sprinkler risers shall be provided with an above grade, exterior, indicating control valve located at the standard fire pit. When multiple sprinkler risers, on-site hydrants, wharf hydrants, or a combination thereof are supplied from the same underground fire line, additional above grade, exterior, indicating control valves shall be installed to facilitate shutting down individual fire sprinkler risers without shutting off other risers, on-site hydrants or wharf hydrants.

14. Sectional control valves (PIV) shall be provided for looped underground fire lines and for fire lines served by more than one water service connection. Post indicator valves shall be used whenever sectional control valves are required. The fire sprinkler monitoring system shall electrically monitor all sectional control valves.

15. Indicate the depth of pipe bury and the type of backfill materials used.

16. Provide a detail of the pipe transition from the horizontal run of pipe to the vertical. (ie. at base of riser or base of hydrant).

17. Listed plastic pipe (AWWA C900) shall not be subject to building foundation/footing loads. When using listed plastic pipe a transition to ductile iron shall be made a minimum of 5' from the building. Show the method of protecting the pipe (ie. sleeve, annular clearance) when ductile iron pipe runs under or through the building slab/footing.

OVERHEAD SPRINKLER SYSTEM

SPECIFIC REQUIREMENTS:

1. The sprinkler system shall be designed and installed in accordance with the City of Mountain View Requirements, NFPA 13 and other applicable NFPA Standards as adopted by the City of Mountain View. *Incorporate as a verbatim note onto the drawings.*

2. Plan submittals for overhead systems shall include working underground drawings. Underground drawings "By Others" shall be submitted for review and permit prior to approval of the overhead plans. **Note**: A permit will not be issued for the overhead system until such time as the underground system has been permitted.

3. All system equipment and components shall be listed/approved for its intended use.

   NOTE: The City of Mountain View reserves the right to not approve a listed component or piece of equipment due to past performance.

4. All welded pipe and welded outlets shall be inspected by the Fire Protection Engineer prior to pipe installation. *Incorporate as a verbatim note onto the drawings.*

5. All new system installations shall be hydrostatically tested at 200 psi for two hours. Alterations to existing systems shall be hydrostatically tested at a minimum of 175 psi for two hours. *Incorporate as a verbatim note onto the drawings.*

   NOTE: This test is generally not required when only adding 1" armovers and drops from existing outlets. A hydrostatic test may be required for extensive alterations, the addition of new supply mains, or when a new system is connected to an existing system.

6. One-and-one-half inch (1-½") fire hose valves (without hose), supplied in accordance with NFPA 13, shall be installed as required by Mountain View City Code Table 14.14. Fire hose valves shall be located so that all areas of the building are within 150 feet travel distance of a fire hose valve connection. Inside hose demand shall be added to the hydraulic calculations at the point in which the hose valve connects to the sprinkler system. Valves shall be of the type in which the 1-½" male threads are an integral part of the valve. Thread-in nipples will not be allowed. Hose valves shall be installed a minimum of 3', maximum of 5' above finished floor. Hose valve cabinets shall be openable without the use of any special tools or knowledge. **NOTE:** NFPA 13 requires a flexible coupling within 24" of the top and bottom of the drop to the hose valve.

7. Provide a full height section view of the area of work and include the size and type of all ceiling and roof construction members. Note: Areas of special consideration such as soffits, multiple ceiling heights or obstructions shall be clearly detailed.

8. Clearly indicate the sprinkler deflector distance criteria used.

9. Provide a key/site plan showing the location of the work in relation to the entire building/site.

10. Provide a riser detail for all new installations and for tenant improvement work requiring hydraulic calculations.

11. Indicate the type, schedule, diameter and C-factor of all piping.

12. Indicate the specific type of fittings used.

13. Provide complete pipe hanger details. Indicate the type of hanger used, the size of all hanger rods, and the size and type of hanger fasteners.

14. Indicate the manufacturer, model, orifice size, K-factor and temperature rating of all sprinklers. Submit a manufacturer's specification sheet for all sprinklers other than standard 1/2" commercial sprinklers.

15. Provide complete sway brace details. Information shall include: seismic bracing calculations using the zone of influence method; the size and type of brace material; size and type of fastener; method of attachment to the building structure (including size of the roof structural member); method of brace attachment to the sprinkler pipe; the angle of the brace and the orientation of the brace to the connecting surface. Brace locations shall be clearly identified on the drawings. **NOTE**: NFPA 13 requires connections to wood to be made with through bolts, with a nut and washer on each end. Additionally, allowable horizontal brace loads on brace assemblies shall be modified as required by Table 6-4.5.10.

16. Trapeze hangers constructed of wood shall not be permitted unless certified by a structural engineer in accordance with the requirements of NFPA 13.

17. An armover detail shall be provided to clearly indicate the method of tie-in for new/relocated sprinklers and the locations of pipe hangers.

18. Alterations to existing systems may be subject to new hydraulic calculations. Tenant improvement submittals shall include:

    - Calculated systems shall include the design criteria of the existing system (hazard classification and density/area), the size of all existing mains and typical pipe sizes for existing branchlines/gridlines in the project area. New piping may be sized in relation to the existing system when the area of work is of equivalent or less hazard.
    - Pipe schedule systems shall identify the pipe sizing back to the main riser and sprinkler head counts for all existing lines and mains serving the project area.

19. An approved Central Station, Remote Station or Proprietary Station, in accordance with NFPA 72, shall electrically monitor all automatic sprinkler system control valves and water flow switches.

    EXCEPTION: Group I, Division 1 occupancies with less than 20 sprinklers and all other occupancies with less than 100 sprinklers.

    Note: A permit is required for all associated monitoring equipment. Obtain a copy of the Fire Alarm and Sprinkler Monitoring requirements from the City of Mountain View Building Inspection Division.

20. A waterflow alarm shall be provided on the exterior of the building, adjacent to each riser, and on the inside of the building in a normally occupied area on each floor. Identify the location of alarms on the drawing.

21. Hydraulic calculations shall include the system hazard classification, design criteria, hydraulic summary, water supply curve with the system demand clearly plotted, flow schematic for grid systems and manufacturer friction loss curves for all detector check/backflow devices.

22. Speculative buildings shall have a minimum design density of not less than that required for Ordinary Hazard Group 2 use over the hydraulically most remote 3,000 square foot area. **(Speculative buildings are buildings in which a tenant or use has not been determined or established at the time the building permit is issued.)**

23. A 10 percent safety factor (available supply versus required supply) shall be provided for all hydraulic calculations and shall be indicated on the supply curve. Note: The total flow, including inside and outside hose demands, shall be indicated as the total required supply.

24. Sprinkler tenant improvement work will require existing hangers and sway bracing to be upgraded within the area of work to comply with NFPA 13 as adopted by the City of Mountain View.

25. When a "shell only" system is submitted for permit and tenant improvement work is not a part of the submittal, the shell sprinklers shall maintain proper deflector distances. In addition, "shell only" systems shall be provided with 1" plugged outlets to accommodate future tenant improvements.

26. Areas beneath raised floors will require automatic fire sprinklers when any of the following conditions are present: combustible construction materials, combustible storage, or contain any materials where the exposed surfaces have a flame spread rating greater than 25. The business owner or tenant shall provide a letter to the City of Mountain View indicating that all materials located within the raised floor space will comply with all identified limitations and restrictions.

27. Double interlock preaction systems shall only be installed in areas requiring protection from freezing.

28. When the preaction system riser is not installed within the area(s) served by the preaction system, a means of manual actuation shall be provided within each area protected by the preaction system.